

## CLAIMS

1. An ultrasonic probe, comprising:
  - an ultrasonic transducer that scans an ultrasonic beam;
  - 5 a transducer-swinging motor that allows the ultrasonic transducer to perform swing scanning in a direction crossing a scanning direction of the ultrasonic beam;
  - a rotary encoder that generates a pulse according to a rotational position of the transducer-swinging motor; and
  - 10 an encoder correction ROM that stores an actual swing scanning angle of the ultrasonic transducer with respect to each count value obtained by counting pulses from the rotary encoder, and outputs the stored actual swing scanning angle of the ultrasonic transducer to outside.
- 15 2. The ultrasonic probe according to Claim 1, wherein the encoder correction ROM stores swing directional angles that are different between a forward path of swing scanning and a return path of the swing scanning.
3. An ultrasonic diagnostic apparatus, comprising:
  - 20 an ultrasonic probe comprising an ultrasonic transducer that scans an ultrasonic beam, a transducer-swinging motor that allows the ultrasonic transducer to perform swing scanning in a direction crossing a scanning direction of the ultrasonic beam, a rotary encoder that generates a pulse according to a rotational position of the transducer-swinging motor, and an
  - 25 encoder correction ROM that stores an actual swing scanning angle of the ultrasonic transducer with respect to each count value obtained by counting pulses from the rotary encoder, and outputs the stored actual swing scanning angle of the ultrasonic transducer to outside;
  - a transmitting/receiving means that excites vibrators of the
  - 30 ultrasonic transducer and receives an ultrasonic echo reflected by a subject;

an encoder counter that counts pulses from the rotary encoder;

a main controlling means that reads out, from the encoder correction ROM in the ultrasonic probe, the actual swing scanning angle of the ultrasonic transducer with respect to each of the counter value;

5 a motor controlling means that performs driving control on the transducer-swinging motor according to the count value from the encoder counter;

a three-dimensional image processing means that forms a three-dimensional image based on ultrasonic echo data obtained by the transmitting/receiving means, the count value from the encoder counter and  
10 the actual swing scanning angle of the ultrasonic transducer with respect to each of the count value that is provided by the main controlling means; and  
an image display means that displays the three-dimensional image.

15 4. The ultrasonic diagnostic apparatus according to Claim 3, wherein the encoder correction ROM stores swing directional angles that are different between a forward path of swing scanning and a return path of the swing scanning.

20 5. An ultrasonic diagnostic apparatus, comprising:

an ultrasonic probe comprising an ultrasonic transducer that scans an ultrasonic beam, a transducer-swinging motor that allows the ultrasonic transducer to perform swing scanning in a direction crossing a scanning direction of the ultrasonic beam, a rotary encoder that generates a pulse  
25 according to a rotational position of the transducer-swinging motor, and an encoder correction ROM that stores an actual swing scanning angle of the ultrasonic transducer with respect to each count value obtained by counting pulses from the rotary encoder, and outputs the stored actual swing scanning angle of the transducer elements unit to outside;

30 a transmitting/receiving means that excites vibrators of the

ultrasonic transducer and receives an ultrasonic echo reflected by a subject;  
an encoder counter that counts pulses from the rotary encoder;  
a main controlling means that reads out, from the encoder correction  
ROM in the ultrasonic probe, the actual swing scanning angle of the  
5 ultrasonic transducer with respect to each of the count value;  
a motor controlling means that performs driving control on the  
transducer-swinging motor according to the count value from the encoder  
counter and the actual swing scanning angle of the ultrasonic transducer  
with respect to each of the count value that is provided by the main  
10 controlling means;  
a three-dimensional image processing means that forms a  
three-dimensional image based on ultrasonic echo data obtained by the  
transmitting/receiving means; and  
an image display means that displays the three-dimensional image.

15

6. The ultrasonic diagnostic apparatus according to Claim 5, wherein  
the encoder correction ROM stores swing directional angles that are  
different between a forward path of swing scanning and a return path of the  
swing scanning.

20